# GUIDE (EXPLANATION) TO PRODUCT DATA SHEETS

## Description

A short description of the product with generic type, composition single/ two / three component, important properties & raw material used in the product.

## Recommended Use

The purpose(s) for which the product is designed or particularly well suited. The product may be specified for other uses in tailor-made paint systems for specific purposes.

## Physical Data

COLOUR : Selected colours are available for Primers & intermediate coats. Top coat shades can be provided as per customers requirement based on National and International Shade Cards. Certain Physical constants may vary from one Colour to another. The chemical resistance of coatings depends on the chemistry & inertness of the pigments used. Industrial shades like Dark Grey, Smoke Grey, Light Grey, Chrome Oxide Green, White & Black should be selected for best chemical resistance while shades like Golden Yellow, P.O.Red, etc. are sensitive to chemical resistance.

FINISH : The appearance of the paint film after drying under optimum conditions, given as high gloss (> 90), glossy (60-90), Semi Glossy (30-60 ), semi-flat (15-30), or flat (< 15). All figures are according to ASTM standards. The actual appearance will depend on the conditions during application and drying / curing. Our products are available in stipple and texture finish also.

SOLID CONTENT BY VOLUME : The volume Solids (VS) figure expresses in the percentage ratio:

$$\frac{\text{Dry Film Thickness}}{\text{Wet Film Thickness}} \times 100$$

The stated figure has been determined as the ratio between dry and wet film thickness of the coating applied, in the indicated thickness, under laboratory conditions, where no paint loss has been encountered.

The method of determination follows the rules of ISO 3233/ASTM D 2697, yet by drying at 20°C. /68 degree F and 60% relative humidity for 7 days instead of drying at higher temperatures.

Volume solids are usually slightly higher than the theoretical value, which is found by a calculation based on the paint composition taking specific gravity and solid content of each individual raw material into consideration.

Volume solids are in better agreement with practical measurements of dry film thickness than the theoretical value.

THEORETICAL SPREADING RATE : The theoretical spreading rate of the given dft on a completely smooth surface is calculated as follows:

$$\frac{\text{Volume solids\% x 10}}{\text{Dry film thickness (micron)}} = \text{Sq.mt./ltr.}$$

Or

$$\frac{\text{Volume solids\% x 16.3}}{\text{Dry film thickness (mils) 1 mil is rounded off to 25.4 micron}} = \text{Sq.ft./US gallon}$$

In the product data sheet the theoretical spreading rate is stated for an indicated dft that is usually specified for the product. Some products may be specified in different dft for different purposes affecting the spreading rate accordingly. Theoretical spreading rate cannot be given for paint materials used for saturation of an absorbing substrate, wood, concrete, etc.

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**PRACTICAL SPREADING RATE** :

The Practical spreading rate is not given in the product data sheet as the variation is too great to be represented by one single figure.

The Practical consumption is estimated by multiplying the theoretical consumption with a relevant consumption factor (CF).

The consumption factor cannot be stated in the product data sheet a variation is too great to be represented by one single figure.

$$\text{Practical Consumption} = \frac{\text{Area} \times \text{CF}}{\text{Theoretical Spreading Rate}}$$

The variation in the consumption factor is largely attributed to the following:

1. Waviness of the surface to be coated and of the paint surface itself leads to 8 co higher consumption in order to reach the specified minimum total thickness of the system.
2. Roughness of the substrate to be painted gives a "dead volume" to be filled up or for shop primers a "surface area" greater than one.
3. Physical losses, such as leftovers in cans, pot-life exceeding, wind loss, loss during cleaning of equipment, etc.

The practical spreading rate thus varies with method of application, skill of the painter, shape of the object to be painted, texture of the substrate, film thickness applied, any working conditions. It is therefore not possible to give a universally valid figure.

In any case it is not beneficial to stretch the paint as much as possible, but rather try to obtain the specified thickness of the applied paint on the entire area.

**DRY FILM THICKNESS/ WET FILM THICKNESS** :

(Abbreviation = Dft or Wft).

The dry film thickness indicated in our data sheets is the minimum recommended for protection.

The minimum dft of a paint system (also an one coat system) should not be less than specified whilst for individual coats the average dft shall not vary by more than 20%.

This explains in part the difference between theoretical and practical covering capacity.

The dry film thickness can be calculated from the applied wet film thickness:

$$\text{Dft} = \frac{\text{Wft} \times \% \text{ volume solids}}{100}, \quad \text{Wft} = \frac{\text{Dft} \times 100}{\% \text{ volume solids}}$$

**FLASH POINT** :

The lowest temperature at which a liquid liberates sufficient vapour to form a mixture with the air near its surface which, if ignited, will make a small flash, but not catch fire.

The flash points of GP's paints are measured according to the A Pensky method (closed cup). We have mentioned Flash points of each components in our product data sheets. The figures are given as guidance with a view to local regulations for precautions against fire during use. The issue of a revised product data sheet will follow substantial changes owing to reformulation.

**DRYING TIME** :

The drying time of the product in the product data sheet is mentioned as "surface dry", "hard dry" and "full cure" .

SURFACE DRY : A slight pressure with a finger does not leave a mark or feel sticky.

HARD DRY : The paint surface is sufficiently hardened to be handled with care without coming off/being damaged.

The drying process until "surface" is for solvent (or water) containing paints -first and foremost dependent on ventilation. Further more it depends on the temperature and on the film thickness of each coat applied.

For physically drying paints the drying time is also influenced by the number of coats and the total film thickness of the system.

FULLY CURED : The curing time is given, for two component products, at 30°C. The curing is accelerated at higher temperatures and retarded at lower temperatures. For products where the curing time is given at 30°C. only, the following rough rule of thumb can be utilised.

The curing time is halved at an increase in temperature of 10°C. and doubled at a decrease in temperature of 10°C.

Curing will stop almost completely below the temperatures stated under APPLICATION CONDITION as the lowest temperature at which the paint should be applied.

POT LIFE : Two components, chemically curing products, are supplied as BASE and HARDENER in the correct mixing ratio. The reaction between the Base & the Hardener starts no sooner they are mixed together & it continues. At certain point paint starts showing viscosity rise. As a thumb rule, if viscosity is found to be doubled the initial viscosity, it is adjudged as end of "pot life". Further the painting is avoided. This period is mentioned in respective product data sheets. It is always advisable that the paint mixed is consumed well before its pot life. It is observed that, the pot life reduces to half with an increase in temperature of 10°C / 18° F, above 30°C & is doubled with the decrease in temperature of 10°C / 18°F, below 30°C. In no case pot life can be extended by adding extra thinner. Such act would be detrimental to performance.

SHELF LIFE : The time the product will keep in good condition when stored under cover in original, sealed containers under normal storage conditions. Shelf life is indicated in literature at 30°C. It will usually decrease at higher temperatures.

## Applicatio n Details

MIXING RATIO : Two component, chemically curing products are supplied as BASE and HARDENER in the correct mixing ratio. The mixing ratio must be strictly adhered to, also when used in smaller quantities.. Add the HARDENER to the BASE 10-15 minutes before use (at 30°C.), unless the pot life is very short, and stir well, preferably with power stirrer. It is very important for two component products that the prescribed amount of hardener is added to the base. In order to ensure this the indicated thinner may in most cases beneficially be used to flush the hardener. Once the material has been mixed the curing will proceed. Therefore, only the quantity needed within the pot life of the mixture should be mixed at a time.

APPLICATION : Gives the possible recommended method(s) of application. Spray data given in our data sheets are indicative and are subject to adjustment. As a general rule the first coats of rust preventing primer should be applied by brush or airless spray to obtain best possible wetting and penetration into the substrate. Application by brush or roller usually demands more coats applied to achieve the specified film thickness than application by spray equipment.

METHOD : GP's most of the paints are delivered in such way, that they are ready for application by brush or conventional air sprayor airless spray after mixing of base and hardener and/or stirring if the paint is too thick e.g. in cold weather or for special purposes, the THINNER indicated under this heading may be added to give the required viscosity. The amount of thinner to be added, depends on prevailing temperature, spray method. The usual maximum percentage is indicated for the respective application method. If more thinning is deemed necessary under special circumstances, consult nearest office / representative of GRAND POLYCOATS CO. PVT. LTD.

THINNER

(MAX. VOL.)

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Adding a small percentage of thinner will give no measurable difference in the film thickness. There are cases, however, when a higher degree of thinning is necessary and justified. It should then be kept in mind that adding thinner increases the quantity of liquid paint with contributing to the solids content. Consequently, a proportionally higher wet film thickness must be applied when adding significant amount of thinner in order to obtain the specified dry film thickness.

$$\text{VS\% after thinning} = \frac{\text{VS\%} \times 100}{\text{\% THINNER added} + 100}$$

STRAINING : Paints are required to be strained / filtered via appropriate straining material. We recommend following straining for getting best aesthetics material after thinning the paints.

1. All glossy top coats : nylon cloth 300/400 mesh
2. All semi glossy top coats : nylon cloth 200 mesh
3. Primers & Matt finishes : nylon cloth 100 mesh
4. High Build : nylon cloth 80 mesh

## Indicated Film Thickness

DFT : Dry film thickness (dft) is indicated in a thickness frequently used in specifications.

WFT INTERVAL : Wet film thickness (wft) is indicated in multiple of 25 micron (1 mil) in order to facilitate the practical measurements with net wet film thickness gauge (comb gauge). These values are rounded off to the multiple of 25 which is regarded most relevant in each case.

OVERCOATING : The time required or allowed to pass at 30°C. before the subsequent coat is applied. The intervals are related to the temperature, film thickness, number of coats, type of future (in service) exposure and will be affected correspondingly. For maximum intervals the temperature in this context is the highest surface temperature during the period. For some products the interval is more critical in regard to intercoat adhesion than others. If the maximum interval is exceeded it may be necessary to roughen the surface to ensure adhesion of the next coat. On the other hand, for some paints the interval may not be critical in respect of adhesion, but a primer coat should not be left unprotected for too long in an aggressive environment. We have provided minimum and maximum overcoating interval for each product. If the maximum interval is exceeded it may be necessary to roughen the surface to ensure adhesion of the next coat. On the other hand, for some paint types the interval may not be critical in respect of adhesion, but a primer coat should not be left unprotected for too long in an aggressive environment.

If nothing else is mentioned the indicated intervals refer to re-coating with the same paint. Other paints of different types may require other (overcoating) intervals.

After exposure of any painted surface in polluted environment through cleaning by high pressure fresh water hosing or another appropriate measure is always recommended before over coating.

Details about recoat and over coating intervals are stated in the relevant painting specification.

COMPATIBILITY : Two or more paints or varnishes, which can be mixed without producing any undesirable effects, such as precipitation, coagulation, gelling, etc, in liquid state or during drying of the film of the mixture, are said to be compatible. Different coats of paints, which can be associated in painting system without producing undesirable effects, are said to be compatible.

**Note : The data sheets are updated time to time, due to continuous upgradation in technology. The latest version of data sheet will "automatically" supersede the earlier version.**

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